

## Recovery Plan Action Status

**Plan Name:** Rio Grande Silvery Minnow (*Hybognathus amarus*) Recovery Plan, First Revision

**Plan Status:** Final Revision 1

**Plan Date:** 22-Feb-10

**Lead Agency:** USFWS

**Lead Office:** New Mexico Ecological Services Field Office

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Species	Action Priority #	Action #	Action Description	Action Status	Est. Initiation Date	Est. Completion Date	Responsible Parties	Work Type	Labor Type	Action Comments
Rio Grande silvery minnow ( <i>Hybognathus amarus</i> )	2	1.1.1	Improve understanding of the relationship between environmental factors and spawning in the Rio Grande silvery minnow.	Ongoing Current	FY 2010		U.S. Fish and Wildlife Service (Service), Middle Rio Grande Endangered Species Collaborative Program	Work type not yet selected	Labor type not yet selected	Larval development and thermal regimes funded FY10
Rio Grande silvery minnow ( <i>Hybognathus amarus</i> )	2	1.1.2	Determine distances and rates of dispersal for various life stages of Rio Grande silvery minnow.	Ongoing Current			Middle Rio Grande Endangered Species Collaborative Program	Work type not yet selected	Labor type not yet selected	PIT tag study in 3rd year to evaluate movement of adults; subadult study needed
Rio Grande silvery minnow ( <i>Hybognathus amarus</i> )	2	1.1.3	Improve understanding of the ecological conditions that influence survival in different life stages of Rio Grande silvery minnow.	Ongoing Current			Middle Rio Grande Endangered Species Collaborative Program	Work type not yet selected	Labor type not yet selected	
Rio Grande silvery minnow ( <i>Hybognathus amarus</i> )	2	1.2.1	Improve understanding of habitats occupied by early life stages of Rio Grande silvery minnow.	Ongoing Current			Middle Rio Grande Endangered Species Collaborative Program	Work type not yet selected	Labor type not yet selected	
Rio Grande silvery minnow ( <i>Hybognathus amarus</i> )	2	1.2.2	Improve understanding of the stream flows that will provide suitable habitat for all life stages of Rio Grande silvery minnow.	Ongoing Current			Middle Rio Grande Endangered Species Collaborative Program	Work type not yet selected	Labor type not yet selected	

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Rio Grande silvery minnow (Hybognathus amarus)	2	1.2.3	Develop strategic habitat restoration plans for the silvery minnow in the middle Rio Grande and elsewhere in its historical range	Partially Complete			U.S. Fish and Wildlife Service (Service), Middle Rio Grande Endangered Species Collaborative Program, Texas Parks and Wildlife Department	Work type not yet selected	Labor type not yet selected	Plans underway/complete in the middle Rio Grande
Rio Grande silvery minnow (Hybognathus amarus)	2	1.2.4	Develop a habitat restoration monitoring program that evaluates the efficacy of habitat restoration techniques	Ongoing Current			Middle Rio Grande Endangered Species Collaborative Program	Work type not yet selected	Labor type not yet selected	
Rio Grande silvery minnow (Hybognathus amarus)	2	1.3	Continue genetic studies on Rio Grande silvery minnow populations.	Ongoing Current			Middle Rio Grande Endangered Species Collaborative Program	Work type not yet selected	Labor type not yet selected	1 each 3 years
Rio Grande silvery minnow (Hybognathus amarus)	2	1.4.1	Continue to collect and evaluate existing data on water quality and sediment quality and identify future investigations that are needed.	Ongoing Not Current			U.S. Fish and Wildlife Service (Service), Middle Rio Grande Endangered Species Collaborative Program	Work type not yet selected	Labor type not yet selected	
Rio Grande silvery minnow (Hybognathus amarus)	2	1.4.2	Design and undertake toxicity tests to assess the effects of contaminants on various life stages of Rio Grande silvery minnow.	Partially Complete			U.S. Fish and Wildlife Service (Service), Middle Rio Grande Endangered Species Collaborative Program, U.S. Geological Survey	Work type not yet selected	Labor type not yet selected	
Rio Grande silvery minnow (Hybognathus amarus)	2	1.4.3	Design and undertake studies to assess the effects of point and non-point source discharges on Rio Grande silvery minnow food sources.	Ongoing Current			U.S. Fish and Wildlife Service (Service), Middle Rio Grande Endangered Species Collaborative Program, University of New Mexico	Work type not yet selected	Labor type not yet selected	Periphyton studies underway at UNM (Bixby)

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Rio Grande silvery minnow (Hybognathus amarus)	2	1.4.4	Design and undertake studies to assess the effects of stormwater pulse-flows (water quality and contaminants) on Rio Grande silvery minnow	Unknown			Middle Rio Grande Endangered Species Collaborative Program	Work type not yet selected	Labor type not yet selected	
Rio Grande silvery minnow (Hybognathus amarus)	2	1.4.5	Design and undertake studies to determine the effects of various flow regimes and pollutant loading on water quality in silvery minnow habitat.	Ongoing Current			U.S. Fish and Wildlife Service (Service), Middle Rio Grande Endangered Species Collaborative Program	Work type not yet selected	Labor type not yet selected	
Rio Grande silvery minnow (Hybognathus amarus)	2	1.4.6	Determine turbidity and sediment levels that reflect ecological conditions suitable for the Rio Grande silvery minnow	Unknown			Environmental Protection Agency, tribes, States	Work type not yet selected	Labor type not yet selected	
Rio Grande silvery minnow (Hybognathus amarus)	3	1.4.7	Develop water quality criteria for protection of the Rio Grande silvery minnow.	Not Started			Environmental Protection Agency, tribes, States	Work type not yet selected	Labor type not yet selected	
Rio Grande silvery minnow (Hybognathus amarus)	3	1.5.1	Improve understanding of the distribution and extent of non-native fish species.	Not Started			Middle Rio Grande Endangered Species Collaborative Program, New Mexico Department of Game and Fish	Work type not yet selected	Labor type not yet selected	
Rio Grande silvery minnow (Hybognathus amarus)	3	1.5.2	Improve our understanding of predation and competition effects on Rio Grande silvery minnow by other Rio Grande fish species.	Not Started			New Mexico Department of Game and Fish, Texas Parks and Wildlife Department	Work type not yet selected	Labor type not yet selected	
Rio Grande silvery minnow (Hybognathus amarus)	3	1.5.3	Improve understanding of the effects of different flow regimes (timing, magnitude, duration) on non-native fishes.	Not Started			Middle Rio Grande Endangered Species Collaborative Program	Work type not yet selected	Labor type not yet selected	

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Rio Grande silvery minnow (Hybognathus amarus)	3	1.5.4	Review and update existing regulations and policies on stocking of non-native sport fishes and bait fish use.	Not Started			New Mexico Department of Game and Fish, Texas Parks and Wildlife Department	Work type not yet selected	Labor type not yet selected	
Rio Grande silvery minnow (Hybognathus amarus)	3	1.6.	Investigate competitive interactions between congeners at various life stages.	Not Started			Middle Rio Grande Endangered Species Collaborative Program	Work type not yet selected	Labor type not yet selected	
Rio Grande silvery minnow (Hybognathus amarus)	3	1.7	Determine the nature and extent of predation on Rio Grande silvery minnow by avian and other predators.	Not Started			Middle Rio Grande Endangered Species Collaborative Program	Work type not yet selected	Labor type not yet selected	
Rio Grande silvery minnow (Hybognathus amarus)	2	2.1.1	Implement habitat restoration projects throughout the middle Rio Grande and the historic range where appropriate.	Partially Complete			U.S. Fish and Wildlife Service (Service), International Boundary and Water Commission, Middle Rio Grande Endangered Species Collaborative Program, Texas Parks and Wildlife Department	Work type not yet selected	Labor type not yet selected	FWS lead in reintroduction areas, MRGESCP in middle Rio Grande
Rio Grande silvery minnow (Hybognathus amarus)	2	2.1.2	Provide for fish passage at irrigation diversion structures.	Planned			U.S. Bureau of Reclamation	Work type not yet selected	Labor type not yet selected	SADD passage construction in FY10
Rio Grande silvery minnow (Hybognathus amarus)	2	2.1.3	Implement management strategies to reduce entrainment of Rio Grande silvery minnow into irrigation canals and the Low Flow Conveyance Channel.	Partially Complete			U.S. Bureau of Reclamation, U.S. Fish and Wildlife Service (Service), Middle Rio Grande Conservancy District	Work type not yet selected	Labor type not yet selected	annual coordination to manage diversions during spawning
Rio Grande silvery minnow (Hybognathus amarus)	3	2.1.4	Design proposed instream and floodplain projects in a manner that enhances their habitat value for the Rio Grande silvery minnow.	Ongoing Current			U.S. Bureau of Reclamation, U.S. Army Corps of Engineers	Work type not yet selected	Labor type not yet selected	

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Rio Grande silvery minnow (Hybognathus amarus)	2	2.2.1	Identify constraints (climate, depletions and other losses, reservoir operations, diversions) that affect habitat during periods of low flow.	Ongoing Current			U.S. Bureau of Reclamation, U.S. Army Corps of Engineers	Work type not yet selected	Labor type not yet selected	
Rio Grande silvery minnow (Hybognathus amarus)	2	2.2.2.1	Retrofit or modify, if necessary, the operation of dams where sediment retention may be effectively managed for partial restoration of historic geomorphology in the middle Rio Grande.	Not Started			U.S. Bureau of Reclamation, U.S. Army Corps of Engineers	Work type not yet selected	Labor type not yet selected	
Rio Grande silvery minnow (Hybognathus amarus)	2	2.2.2.2	Provide storage space for water to augment stream flow in the middle Rio Grande.	Not Started			U.S. Bureau of Reclamation, U.S. Army Corps of Engineers	Work type not yet selected	Labor type not yet selected	
Rio Grande silvery minnow (Hybognathus amarus)	2	2.2.2.3	Identify how water supply and flood control operations affect riverine habitat development and habitat availability, in the middle Rio Grande and seek benefits for the silvery minnow.	Ongoing Current			Middle Rio Grande Endangered Species Collaborative Program	Work type not yet selected	Labor type not yet selected	
Rio Grande silvery minnow (Hybognathus amarus)	2	2.2.2.4	Provide for greater flexibility in water releases and/or storage for spawning and larval survivorship in the middle Rio Grande.	Partially Complete			U.S. Army Corps of Engineers	Work type not yet selected	Labor type not yet selected	Cochiti Deviation agreement in place through 2013; costs are for operations and coordination
Rio Grande silvery minnow (Hybognathus amarus)	3	2.2.3	Encourage conjunctive use of surface water and groundwater in the Rio Grande.	Ongoing Current			Office of the State Engineer, New Mexico	Work type not yet selected	Labor type not yet selected	

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Rio Grande silvery minnow (Hybognathus amarus)	3	2.2.4	Implement measures to increase water use efficiencies, water conservation, and forbearance in the middle Rio Grande valley to maintain river flows.	Not Started			U.S. Bureau of Reclamation, U.S. Army Corps of Engineers, Middle Rio Grande Conservancy District	Work type not yet selected	Labor type not yet selected	
Rio Grande silvery minnow (Hybognathus amarus)	2	2.2.5	Acquire water from willing sellers or lessors for the purposes of maintaining flows for the silvery minnow in the middle Rio Grande.	Ongoing Current			U.S. Bureau of Reclamation	Work type not yet selected	Labor type not yet selected	annual
Rio Grande silvery minnow (Hybognathus amarus)	3	2.2.6	Establish policies that limit floodplain development in the middle Rio Grande and educate the public on the need to limit such development.	Unknown			U.S. Bureau of Reclamation, U.S. Army Corps of Engineers	Work type not yet selected	Labor type not yet selected	Policy development followed by outreach
Rio Grande silvery minnow (Hybognathus amarus)	3	2.3.1	Work with Mexico to provide water delivery to the Rio Grande/Rio Bravo del Norte (Big Bend region).	Ongoing Current			U.S. Fish and Wildlife Service (Service), International Boundary and Water Commission, Texas Commission on Environmental Quality	Work type not yet selected	Labor type not yet selected	
Rio Grande silvery minnow (Hybognathus amarus)	3	2.3.2	Encourage flows within the Big Bend reach that support Rio Grande silvery minnow populations.	Ongoing Current			International Boundary and Water Commission, Texas Commission on Environmental Quality	Work type not yet selected	Labor type not yet selected	
Rio Grande silvery minnow (Hybognathus amarus)	3	2.3.3.1	Provide for storage of water to augment stream flow in reintroduced areas.	Not Started			International Boundary and Water Commission, Texas Commission on Environmental Quality	Work type not yet selected	Labor type not yet selected	
Rio Grande silvery minnow (Hybognathus amarus)	3	2.3.3.2	Identify how reservoir operations for water conveyance affect riverine habitat development and habitat availability.	Ongoing Current			U.S. Bureau of Reclamation, U.S. Army Corps of Engineers, U.S. Fish and Wildlife Service (Service)	Work type not yet selected	Labor type not yet selected	

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Rio Grande silvery minnow (Hybognathus amarus)	3	2.3.4	Investigate legal, institutional, and technical feasibility of implementing a program of conjunctive use of surface and ground water in reintroduced areas.	Planned			U.S. Fish and Wildlife Service (Service), International Boundary and Water Commission, Office of the State Engineer, New Mexico, Texas Commission on Environmental Quality	Work type not yet selected	Labor type not yet selected	
Rio Grande silvery minnow (Hybognathus amarus)	3	2.3.5	Implement measures to increase water use efficiencies and conservation in reintroduced areas.	Planned			U.S. Fish and Wildlife Service (Service), International Boundary and Water Commission, Office of the State Engineer, New Mexico, Texas Commission on Environmental Quality	Work type not yet selected	Labor type not yet selected	
Rio Grande silvery minnow (Hybognathus amarus)	3	2.3.6	Implement a comprehensive program of data collection on water supply and use for improvement of water and habitat management in reintroduced areas.	Ongoing Current			U.S. Fish and Wildlife Service (Service), International Boundary and Water Commission, Texas Commission on Environmental Quality	Work type not yet selected	Labor type not yet selected	Database dev. in 1st yr. \$25k/yr to maintain
Rio Grande silvery minnow (Hybognathus amarus)	3	2.3.7	Retrofit or change the operation of inflow gates at dams where sediment retention is detrimental to the appropriate geomorphology in reintroduced areas.	Not Started			U.S. Bureau of Reclamation, U.S. Army Corps of Engineers, International Boundary and Water Commission	Work type not yet selected	Labor type not yet selected	
Rio Grande silvery minnow (Hybognathus amarus)	3	2.3.8	Establish policies that limit floodplain development in reintroduced areas and educate the public on the need to limit such development in reintroduced areas.	Not Started			U.S. Army Corps of Engineers, States	Work type not yet selected	Labor type not yet selected	Policy development followed by outreach

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Rio Grande silvery minnow (Hybognathus amarus)	3	2.3.9	Investigate the potential of habitat construction that, during periods of low flow, will provide suitable habitat for the silvery minnow in reintroduced areas.	Not Started			U.S. Bureau of Reclamation, U.S. Fish and Wildlife Service (Service), International Boundary and Water Commission, Texas Parks and Wildlife Department	Work type not yet selected	Labor type not yet selected	
Rio Grande silvery minnow (Hybognathus amarus)	1	3.1.1	Annually update a controlled propagation plan for long-term Rio Grande silvery minnow propagation activities.	Ongoing Current			U.S. Fish and Wildlife Service (Service), Middle Rio Grande Endangered Species Collaborative Program	Work type not yet selected	Labor type not yet selected	\$50K in 2006 to develop plan, \$15 to refine annually
Rio Grande silvery minnow (Hybognathus amarus)	1	3.1.2	Evaluate and annually refine methods of Rio Grande silvery minnow propagation	Ongoing Current			U.S. Fish and Wildlife Service (Service)	Work type not yet selected	Labor type not yet selected	2 Plan complete, revise as needed.
Rio Grande silvery minnow (Hybognathus amarus)	1	3.1.3	Continue genetic monitoring and study of propagated Rio Grande silvery minnow.	Ongoing Current			Middle Rio Grande Endangered Species Collaborative Program	Work type not yet selected	Labor type not yet selected	
Rio Grande silvery minnow (Hybognathus amarus)	2	3.1.4.1	Develop a larval fish key to the middle Rio Grande and for stream segments where reintroductions are likely.	Ongoing Current			U.S. Bureau of Reclamation, U.S. Fish and Wildlife Service (Service)	Work type not yet selected	Labor type not yet selected	Funded by BOR in FY 09
Rio Grande silvery minnow (Hybognathus amarus)	2	3.1.4.2	Determine the efficacy of various methods for marking Rio Grande silvery minnow (all life stages)	Partially Complete			U.S. Fish and Wildlife Service (Service)	Work type not yet selected	Labor type not yet selected	Adult marking methods have been tested; subadult studies needed
Rio Grande silvery minnow (Hybognathus amarus)	2	3.1.4.3	Determine the role of environmental parameters in sex determination of Rio Grande silvery minnow.	Not Started			Middle Rio Grande Endangered Species Collaborative Program	Work type not yet selected	Labor type not yet selected	



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Rio Grande silvery minnow (Hybognathus amarus)	2	3.1.4.4	Determine the rate of development and hatching success under various environmental conditions for Rio Grande silvery minnow.	Not Started			U.S. Fish and Wildlife Service (Service), Middle Rio Grande Endangered Species Collaborative Program	Work type not yet selected	Labor type not yet selected	
Rio Grande silvery minnow (Hybognathus amarus)	1	3.2.1	Annually review and revise the Rio Grande silvery minnow augmentation plan for the middle Rio Grande.	Ongoing Not Current			U.S. Fish and Wildlife Service (Service), Middle Rio Grande Endangered Species Collaborative Program	Work type not yet selected	Labor type not yet selected	Same as 3.1.1
Rio Grande silvery minnow (Hybognathus amarus)	2	3.2.2	Coordinate augmentation needs with propagation activities	Ongoing Current			U.S. Fish and Wildlife Service (Service)	Work type not yet selected	Labor type not yet selected	
Rio Grande silvery minnow (Hybognathus amarus)	2	3.2.3	Improve our understanding of the effects of various stocking conditions and release sites on Rio Grande silvery minnow.	Partially Complete			U.S. Fish and Wildlife Service (Service), Middle Rio Grande Endangered Species Collaborative Program	Work type not yet selected	Labor type not yet selected	
Rio Grande silvery minnow (Hybognathus amarus)	2	3.2.4	Determine the effects of hatchery-to-release site transport conditions on stocked Rio Grande silvery minnow.	Partially Complete			U.S. Fish and Wildlife Service (Service)	Work type not yet selected	Labor type not yet selected	
Rio Grande silvery minnow (Hybognathus amarus)	2	3.3.1	Develop a plan for reestablishment of Rio Grande silvery minnow for each reintroduction location.	Ongoing Not Current			U.S. Fish and Wildlife Service (Service)	Work type not yet selected	Labor type not yet selected	Big Bend Plan complete, update as needed
Rio Grande silvery minnow (Hybognathus amarus)	2	3.3.3	Monitor the reintroduced populations of Rio Grande silvery minnow.	Ongoing Current			U.S. Fish and Wildlife Service (Service)	Work type not yet selected	Labor type not yet selected	Costs increase as populations are added
Rio Grande silvery minnow (Hybognathus amarus)	2	3.4	Develop population viability models to assess extinction probabilities for existing and reintroduced populations.	Ongoing Current			U.S. Fish and Wildlife Service (Service), Middle Rio Grande Endangered Species Collaborative Program	Work type not yet selected	Labor type not yet selected	

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Rio Grande silvery minnow (Hybognathus amarus)	2	4.1	Develop and annually review interim workplans to ensure progress toward recovery of the silvery minnow	Planned			U.S. Fish and Wildlife Service (Service)	Work type not yet selected	Labor type not yet selected	1 each 5 yrs
Rio Grande silvery minnow (Hybognathus amarus)	1	4.2.1	Use the Middle Rio Grande Long-Term Fish Population Monitoring Program methodology as the model in the development and implementation of a sampling protocol for a long-term fish monitoring program.	Ongoing Current			U.S. Fish and Wildlife Service (Service), Middle Rio Grande Endangered Species Collaborative Program	Work type not yet selected	Labor type not yet selected	
Rio Grande silvery minnow (Hybognathus amarus)	3	4.2.2	Develop and implement a sampling methodology of sufficient rigor to generate a statistically reliable population estimate for each population of Rio Grande silvery minnow.	Ongoing Current			Middle Rio Grande Endangered Species Collaborative Program	Work type not yet selected	Labor type not yet selected	Three year pilot study complete. Funding for additional refinement and estimation
Rio Grande silvery minnow (Hybognathus amarus)	3	4.2.3	Establish and maintain a single, centralized, standardized database for storage and retrieval of hydrologic, biologic, economic, and social data, including both stockings and captures of target species, and collect and maintain specimens in a research museum.	Ongoing Current			U.S. Fish and Wildlife Service (Service), Middle Rio Grande Endangered Species Collaborative Program	Work type not yet selected	Labor type not yet selected	Database development started in 08 may be complete by 2010; estimated \$25k/yr to maintain.
Rio Grande silvery minnow (Hybognathus amarus)	2	4.3	Utilize independent and autonomous peer review to guide and implement recovery actions.	Ongoing Current			U.S. Fish and Wildlife Service (Service), Middle Rio Grande Endangered Species Collaborative Program	Work type not yet selected	Labor type not yet selected	1 per 5 yrs

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Rio Grande silvery minnow (Hybognathus amarus)	3	5.1	Issue notices regarding status of Rio Grande silvery minnow recovery effort.	Planned			U.S. Fish and Wildlife Service (Service)	Work type not yet selected	Labor type not yet selected	1 each 5 yrs
Rio Grande silvery minnow (Hybognathus amarus)	3	5.2.2	Identify key messages.	Ongoing Not Current			U.S. Fish and Wildlife Service (Service)	Work type not yet selected	Labor type not yet selected	¿Plan complete, revise as needed.
Rio Grande silvery minnow (Hybognathus amarus)	3	5.2.3	Develop targeted outreach programs and materials.	Planned			U.S. Fish and Wildlife Service (Service)	Work type not yet selected	Labor type not yet selected	
Rio Grande silvery minnow (Hybognathus amarus)	3	5.3	Develop and implement an outreach and communications plan that will help all interested parties to better understand the Rio Grande silvery minnow and its habitat, as well as related conservation and water management issues.	Planned			U.S. Fish and Wildlife Service (Service)	Work type not yet selected	Labor type not yet selected	
Rio Grande silvery minnow (Hybognathus amarus)	3	5.3.1	Identify key audiences.	Not Started			U.S. Fish and Wildlife Service (Service)	Work type not yet selected	Labor type not yet selected	Same as 3.1.1
Rio Grande silvery minnow (Hybognathus amarus)	3	5.3.1	Identify key audiences.	Planned			U.S. Fish and Wildlife Service (Service)	Work type not yet selected	Labor type not yet selected	Same as 3.1.1